

Bay Area Air Quality Management District

939 Ellis Street
San Francisco, CA 94109
(415) 771-6000

Proposed

MAJOR FACILITY REVIEW PERMIT

Issued To:
Gas Recovery Systems, Inc.
Facility #B1668

Facility Address:
Marsh Road
Menlo Park, CA 94025

Mailing Address:
1020 Serpentine Lane, Suite #110
Pleasanton, CA 94566

Responsible Official

Alan J. Purves, COO
(925) 461-4400

Facility Contact

Matthew Nourot, Environmental Manager
(925) 606-3700

Type of Facility:

Landfill Gas

Primary SIC:

#4911

Product:

Electrical Power

BAAQMD Permit Division Contact:

Hon Man

ISSUED BY THE BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Ellen Garvey, Executive Officer/Air Pollution Control Officer

Date

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I. STANDARD CONDITIONS

A. Administrative Requirements

The permit holder shall comply with all applicable requirements in the following regulations:

BAAQMD Regulation 1 - General Provisions and Definitions

(as amended by the District Board on 5/17/00);

SIP Regulation 1 - General Provisions and Definitions

(as approved by EPA through 8/27/99);

BAAQMD Regulation 2, Rule 1 - Permits, General Requirements

(as amended by the District Board on 5/17/00);

SIP Regulation 2, Rule 1 - Permits, General Requirements

(as approved by EPA through 2/25/99);

BAAQMD Regulation 2, Rule 2 - Permits, New Source Review

(as amended by the District Board on 5/17/00);

SIP Regulation 2, Rule 2 - Permits, New Source Review and Prevention of Significant Deterioration

(as approved by EPA through 2/25/99);

BAAQMD Regulation 2, Rule 4 - Permits, Emissions Banking

(as amended by the District Board on 5/17/00); and

SIP Regulation 2, Rule 4 - Permits, Emissions Banking

(as approved by EPA through 2/25/99).

BAAQMD Regulation 2, Rule 6 - Permits, Major Facility Review

(as amended by the District Board on 10/20/99).

B. Conditions to Implement Regulation 2, Rule 6, Major Facility Review

1. This Major Facility Review Permit was issued on [] and expires on [when issued, enter 5th anniversary of issue date]. The permit holder shall submit a complete application for renewal of this Major Facility Review Permit no later than [when issued, enter date 6 months prior to permit expiration date] and no earlier than [when issued, enter date 12 months prior to expiration date]. **If a complete application for renewal has not been submitted in accordance with these deadlines, the facility may not operate after** [when issued, enter 5th anniversary of issue date]. (Regulation 2-6-307, 404.2, & 409.6; MOP Volume II, Part 3, §4.2)
2. The permit holder shall comply with all conditions of this permit. The permit consists of this document and all appendices. Any non-compliance with the terms and conditions of this permit will constitute a violation of the law and will be grounds for enforcement action; permit termination, revocation and re-issuance, or modification; or denial of a permit renewal application. (Regulation 2-6-307; MOP Volume II, Part 3, §4.11)
3. In the event any enforcement action is brought as a result of a violation of any term or condition of this permit, the fact that it would have been necessary for the permittee to halt or reduce the permitted activity in order to maintain compliance with such term or condition shall not be a defense to such enforcement action. (MOP Volume II, Part

3, §4.11)

I. Standard Conditions

4. This permit may be modified, revoked, reopened and reissued, or terminated for cause. (Regulation 2-6-307, 409.8, 415; MOP Volume II, Part 3, §4.11)
5. The filing of a request by the facility for a permit modification, revocation and re-issuance, or termination, or of a notification of planned changes or anticipated non-compliance does not stay the applicability of any permit condition. (Regulation 2-6-409.7; MOP Volume II, Part 3, §4.11)
6. This permit does not convey any property rights of any sort, nor any exclusive privilege. (Regulation 2-6-409.7; MOP Volume II, Part 3, §4.11)
7. The permit holder shall supply within 30 days any information that the District requests in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit or to determine compliance with the permit. (Regulation 1-441, Regulation 2-6-409.4 & 501; MOP Volume II, Part 3, §4.11)
8. Any records required to be maintained pursuant to this permit which the permittee considers to contain proprietary or trade secret information shall be prominently designated as such. Copies of any such proprietary or trade secret information which are provided to the District shall be maintained by the District in a locked confidential file, provided, however, that requests from the public for the review of any such information shall be handled in accordance with the District's procedures set forth in Section 11 of the District Administrative Code. (Regulation 2-6-419; MOP Volume II, Part 3, §4.11)
9. Proprietary or trade secret information provided to EPA will be subject to the requirements of 40 CFR Part 2, Subpart B - Public Information, Confidentiality of Business Information. (40 CFR Part 2)
10. The emissions inventory submitted with the application for this Major Facility Review Permit is an estimate of actual emissions for the time period stated and is included only as one means of determining applicable requirements for emission sources. It does not establish, or constitute a basis for establishing, any new emission limitations. (MOP Volume II, Part 3, §4.11)

C. Requirement to Pay Fees

The permit holder shall pay annual fees in accordance with District Regulation 3, including Schedule P. (Regulation 2-6-402 & 409.13, Regulation 3; MOP Volume II, Part 3, §4.12)

D. Inspection and Entry

Access to Facility: The permit holder shall provide reasonable access to the facility and equipment which is subject to this permit to the APCO and/or to his or her designee. (Regulation 1-440, Regulation 2-6-409.3; MOP Volume II, Part 3, §4.14)

E. Records

Notwithstanding the specific wording in any requirement, all records for federally enforceable requirements shall be maintained for at least five years from the date of entry. (Regulation 2-6-501, Regulation 3; MOP Volume II, Part 3, §4.7)

F. Monitoring Reports

Reports of all required monitoring must be submitted to the District at least once every six

I. Standard Conditions

months, except where an applicable requirement specifies more frequent reporting. The first reporting period for this permit shall be [date of issuance] to [six months later]. The report shall be submitted by [one month after end of reporting period]. Subsequent reports shall be for the following periods: [_____ 1st through _____ 30th or 31st] and [_____ 1st through _____ 30th or 31st], and are due on the last day of the month after the end of the reporting period. All instances of non-compliance shall be clearly identified in these reports. The reports shall be certified by the responsible official as true, accurate, and complete. In addition, all instances of non-compliance with the permit shall be reported in writing to the District's Compliance and Enforcement Division within 10 calendar days of the discovery of the incident. Within 30 calendar days of the discovery of any incident of non-compliance, the facility shall submit a written report including the probable cause of non-compliance and any corrective or preventative actions. The reports shall be sent to the following address:

Director of Compliance and Enforcement
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, CA 94109
Attn: Title V Reports

(Regulation 2-6-502, Regulation 3; MOP Volume II, Part 3, §4.7)

G. Compliance Certification

Compliance certifications shall be submitted annually by the responsible official of this facility to the Bay Area Air Quality Management District and to the Environmental Protection Agency. The certification period will be _____ 1st to _____ 30th or 31st. The certification shall be submitted by _____ 30th or 31st of each year. The certification must list each applicable requirement, the compliance status, whether compliance was continuous or intermittent, the method used to determine compliance, and any other specific information required by the permit. The permit holder may satisfy this requirement through submittal of District-generated Compliance Certification forms. The certification should be directed to the District's Compliance and Enforcement Division at the address above, and a copy of the certification should be sent to the Environmental Protection Agency at the following address:

Director of the Air Division
USEPA, Region IX
75 Hawthorne Street
San Francisco, CA 94105
Attention: Air-3

(MOP Volume II, Part 3, §4.5 and 4.15)

H. Emergency Provisions

I. Standard Conditions

1. The permit holder may seek relief from enforcement action in the event of a breakdown, as defined by Regulation 1-208 of the District's Rules and Regulations, by following the procedures contained in Regulations 1-431 and 1-432. The District will thereafter determine whether breakdown relief will be granted in accordance with Regulation 1-433. (MOP Volume II, Part 3, §4.8)
2. The permit holder may seek relief from enforcement action for a violation of any of the terms and conditions of this permit caused by conditions beyond the permit holder's reasonable control by applying to the District's Hearing Board for a variance pursuant to Health and Safety Code Section 42350. The Hearing Board will determine after notice and hearing whether variance relief should be granted in accordance with the procedures and standards set forth in Health and Safety Code Section 42350 et seq. Any variance granted by the Hearing Board from any term or condition of this permit which lasts longer than 90 days will be subject to EPA approval. (MOP Volume II, Part 3, §4.8)
3. Notwithstanding the foregoing, the granting by the District of breakdown relief or the issuance by the Hearing Board of a variance will not provide relief from federal enforcement. (MOP Volume II, Part 3, §4.8)

I. Severability

In the event that any provision of this permit is invalidated by a court or tribunal of competent jurisdiction, or by the Administrator of the EPA, all remaining portions of the permit shall remain in full force and effect. (Regulation 2-6-409.5; MOP Volume II, Part 3, §4.10)

J. Miscellaneous Conditions

1. The maximum capacity for each source as shown in Table II-A is the maximum allowable capacity. Exceedance of the maximum allowable capacity for any source is a violation of Regulation 2, Rule 1, Section 301. (Regulation 2-1-301)

II. EQUIPMENT

Table II A - Permitted Sources

Each of the following sources has been issued a permit to operate pursuant to the requirements of BAAQMD Regulation 2, Permits. The capacities in this table are the maximum allowable capacities for each source, pursuant to Standard Condition I.J and Regulation 2-1-301.

S-#	Description	Make or Type	Model	Capacity
2	Internal Combustion Engine, Landfill Gas (landfill gas)	Superior	8G825	750 HP 6.75 MM BTU/hour
3	Internal Combustion Engine, Landfill Gas (landfill gas)	Superior	8G825	750 HP 6.75 MM BTU/hour
4	Internal Combustion Engine, Landfill Gas (landfill gas)	Superior	8G825	750 HP 6.75 MM BTU/hour
5	Internal Combustion Engine, Landfill Gas (landfill gas)	Superior	8G825	750 HP 6.75 MM BTU/hour

Table II B - Abatement Devices

A-#	Description	Source(s) Controlled	Applicable Requirement	Operating Parameters	Limit or Efficiency
1	Genstar Thermal Reactor	2	BAAQMD Condition #338: part 3		740 ppmv CO @ 15% O ₂
2	Genstar Thermal Reactor	3	BAAQMD Condition #338: part 3		740 ppmv CO @ 15% O ₂
3	Genstar Thermal Reactor	4	BAAQMD Condition #338: part 3		740 ppmv CO @ 15% O ₂
4	Genstar Thermal Reactor	5	BAAQMD Condition #338: part 3		740 ppmv CO @ 15% O ₂

III. GENERALLY APPLICABLE REQUIREMENTS

The permit holder shall comply with all applicable requirements, including those specified in the BAAQMD and SIP Rules and Regulations and other federal requirements cited below. These requirements apply in a general manner to the facility and/or to sources exempt from the requirement to obtain a District Permit to Operate. The District has determined that these requirements would not be violated under normal, routine operations, and that no additional periodic monitoring or reporting to demonstrate compliance is warranted. In cases where a requirement, in addition to being generally applicable, is also specifically applicable to one or more sources, the requirement and the source are also included in Section IV, Source-Specific Applicable Requirements, of this permit.

The dates in parenthesis in the Title column identify the versions of the regulations being cited and are, as applicable:

1. BAAQMD regulation(s): The date(s) of adoption or most recent amendment of the regulation by the District Board
2. Any federal requirement, including a version of a District regulation that has been approved into the SIP: The most recent date of EPA approval of any portion of the rule, encompassing all actions on the rule through that date

The full language of SIP requirements is included in Appendix A of this permit if the SIP requirement is different from the current BAAQMD requirement.

NOTE:

There are differences between the current BAAQMD rule and the version of the rule in the SIP. For specific information, contact the District's Rule Development Section of the Enforcement Division. All sources must comply with both versions of the rule until US EPA has reviewed and approved the District's revision of the regulation.

Table III
Generally Applicable Requirements

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)
BAAQMD Regulation 1	General Provisions and Definitions (5/17/00)	N
SIP Regulation 1	General Provisions and Definitions (8/27/99)	Y
BAAQMD Regulation 4	Air Pollution Episode Plan (3/20/91)	N
SIP Regulation 4	Air Pollution Episode Plan (8/06/90)	Y
BAAQMD Regulation 5	Open Burning (11/2/94)	N
BAAQMD Regulation 6	Particulate Matter and Visible Emissions (12/19/90)	N
BAAQMD Regulation 7	Odorous Substances (3/17/82)	N

III. Generally Applicable Requirements

Table III
Generally Applicable Requirements

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)
BAAQMD Regulation 7	Odorous Substances (3/17/82)	N
BAAQMD Regulation 8, Rule 1	Organic Compounds - General Provisions (6/15/94)	Y
BAAQMD Regulation 8, Rule 3	Organic Compounds - Architectural Coatings (12/20/95)	Y
BAAQMD Regulation 8, Rule 49	Organic Compounds - Aerosol Paint Products (12/20/95)	N
SIP Regulation 8, Rule 49	Organic Compounds - Aerosol Paint Products (3/22/95)	Y
BAAQMD Regulation 8, Rule 51	Organic Compounds - Adhesive and Sealant Products (12/20/95)	N
BAAQMD Regulation 11, Rule 2	Hazardous Pollutants - Asbestos Demolition, Renovation and Manufacturing (12/4/91)	Y
BAAQMD Regulation 12, Rule 4	Miscellaneous Standards of Performance - Sandblasting (7/11/90)	Y

IV. SOURCE-SPECIFIC APPLICABLE REQUIREMENTS

The permit holder shall comply with all applicable requirements, including those specified in the BAAQMD and SIP Rules and Regulations and other federal requirements cited below. The requirements cited in the following tables apply in a specific manner to the indicated source(s).

The dates in parenthesis in the Title column identify the versions of the regulations being cited and are, as applicable:

1. BAAQMD regulation(s): The date(s) of adoption or most recent amendment of the regulation by the District Board
2. Any federal requirement, including a version of a District regulation that has been approved into the SIP: The most recent date of EPA approval of any portion of the rule, encompassing all actions on the rule through that date

The full text of each permit condition cited is included in Section VI, Permit Conditions, of this permit. The full language of SIP requirements is included in Appendix A of this permit if the SIP requirements are different from the current BAAQMD requirements. All other text may be found in the regulations themselves.

Table IV – A
Source-specific Applicable Requirements
S-2, S-3, S-4, S-5- INTERNAL COMBUSTION ENGINES, LANDFILL GAS FIRED

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
BAAQMD Regulation 1	General Provisions and Definitions (5/17/00)		
1-523	Parametric Monitoring and Recordkeeping Procedures	Y	7/1/02
1-523.1	Reporting requirement for periods of inoperation > 24 hours	Y	7/1/02
1-523.2	Limit on duration of inoperation	Y	7/1/02
1-523.3	Reporting requirement for violations of any applicable limits	Y	7/1/02
1-523.4	Records of inoperation, tests, calibrations, adjustments, & maintenance	Y	7/1/02
BAAQMD Regulation 6	Particulate Matter and Visible Emissions (12/19/90)		
6-301	Ringelmann No. 1 Limitation	Y	
6-305	Visible Particles	Y	
6-310	Particle Weight Limitation	Y	
6-401	Appearance of Emissions	Y	
BAAQMD			

IV. Source-specific Applicable Requirements

Table IV – A
Source-specific Applicable Requirements
S-2, S-3, S-4, S-5- INTERNAL COMBUSTION ENGINES, LANDFILL GAS FIRED

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
Regulation 8, Rule 34	Organic Compounds - Solid Waste Disposal Sites (10/6/99)		
8-34-113	Limited Exemption, Inspection and Maintenance	N	
8-34-113.1	Emission Minimization Requirement	Y	
8-34-113.2	Shutdown Time Limitation	N	
8-34-113.3	Recordkeeping Requirement	Y	
8-34-114	Limited Exemption, Energy Recovery Device and Emission Control System	Y	Expires 7/1/02 (exp. date not FE)
8-34-119	Limited Exemption, Inactive or Closed Landfills	N	
8-34-301	Landfill Gas Collection and Emission Control System Requirements	N	
8-34-301.1	Continuous Operation	N	
8-34-301.2	Collection and Control Systems Leak Limitations	N	
8-34-301.4b	Limits for Other Emission Control Systems	N	7/1/02
8-34-408	Collection and Control System Design Plans	N	
8-34-408.2	Sites With Existing Collection and Control Systems	N	
8-34-410	Equipment Removal Report	N	
8-34-411	Annual Report	N	
8-34-501	Operating Records	N	
8-34-501.2	Emission Control System Downtime	N	
8-34-501.3	Continuous Temperature Records for Enclosed Combustors	N	7/1/02
8-34-501.4	Testing	N	
8-34-501.6	Leak Discovery and Repair Records	N	
8-34-501.10	Gas Flow Rate Records for All Emission Control Systems	N	7/1/02
8-34-501.12	Records Retention for 5 Years	N	
8-34-503	Landfill Gas Collection and Emission Control System Leak Testing	Y	
8-34-504	Portable Hydrocarbon Detector	Y	
8-34-507	Continuous Temperature Monitor and Recorded	N	7/1/02
8-34-508	Gas Flow Meter	N	7/1/02

IV. Source-specific Applicable Requirements

Table IV – A
Source-specific Applicable Requirements
S-2, S-3, S-4, S-5- INTERNAL COMBUSTION ENGINES, LANDFILL GAS FIRED

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
SIP Regulation 8, Rule 34	Organic Compounds - Solid Waste Disposal Sites (6/15/94)		
8-34-113	Exemption, Inspection and Maintenance	Y	
8-34-113.1	Emission Minimization Requirement	Y	
8-34-113.2	Shutdown Time Limitation	Y ¹	
8-34-113.3	Recordkeeping Requirement	Y	
8-34-114	Limited Exemption, Energy Recovery Device and Emission Control System	Y ¹	
8-34-301	Landfill Gas Collection and Emission Control System Requirements	Y	
8-34-301.1	Collection and Control Systems Leak Limitations	Y	
8-34-301.4	Continuous Operation	Y	
8-34-501	Operating Records	Y	
8-34-501.2	Emission Control System Downtime	Y	
8-34-501.4	Records of Testing for Compliance with 8-34-111.3 or 301	Y	
8-34-501.6	Records Retention	Y	
8-34-503	Landfill Gas Collection System Testing	Y	
8-34-504	Portable Hydrocarbon Detector	Y	
BAAQMD Regulation 9, Rule 1	Inorganic Gaseous Pollutants – Sulfur Dioxide (3/15/95)		
9-1-301	Limitations on Ground Level Concentrations	Y	
9-1-302	General Emission Limitations	Y	
BAAQMD Regulation 9, Rule 2	Inorganic Gaseous Pollutants – Hydrogen Sulfide (10/6/99)		
9-2-301	Limitations on Hydrogen Sulfide	N	
BAAQMD Regulation 9 Rule 8	Inorganic Gaseous Pollutants – Nitrogen Oxides and Carbon Monoxide from Stationary Internal Combustion Engines (1/20/93)		
9-8-302	Emission Limits – Waste Derived Fuel Gas	Y	
9-8-302.2	Rich-Burn Engines: NOx Emission Limit	Y	

IV. Source-specific Applicable Requirements

Table IV – A
Source-specific Applicable Requirements
S-2, S-3, S-4, S-5- INTERNAL COMBUSTION ENGINES, LANDFILL GAS FIRED

Applicable Requirement	Regulation Title or Description of Requirement	Federally Enforceable (Y/N)	Future Effective Date
9-8-302.3	CO Emission Limit	Y	
BAAQMD Condition # 338			
Part 1	Exclusively on landfill gas (Plant Cumulative Increase)	Y	
Part 2	NO ₂ from each engine \leq 210 ppm @ 15% O ₂ (BACT and Regulation 9-8-302.2)	Y	
Part 3	CO from each engine \leq 740 ppm @ 15% O ₂ (BACT and Plant Cumulative Increase)	Y	
Part 4	Annual source test (Regulation 8-34-114, 8-34-301.4, 9-8-302.2 and 9-8-302.3)	Y	
Part 5	Total reduced sulfur compounds of the collected landfill gas \leq 1300 ppmv (dry) (Regulation 9-1-302)	Y	
Part 6	Annual throughput limit (Regulation 2-1-301)	Y	
Part 7	Recordkeeping for throughput limit (Regulation 2-1-301)	Y	

- 1 This section has been removed from BAAQMD Regulations because it has been superseded. Nevertheless, the source must comply with this regulation until US EPA has reviewed and approved (or disapproved) the District's revision of the regulation.

V. SCHEDULE OF COMPLIANCE

The permit holder shall comply with all applicable requirements cited in this permit. The permit holder shall also comply with applicable requirements that become effective during the term of this permit.

VI. PERMIT CONDITIONS

Any condition that is preceded by an asterisk is not federally enforceable.

The District has provided comments in italicized text following each condition number. These comments describe the rationale behind the proposed condition changes identified in this section by strikeout and underline formatting. All italicized text will be deleted from the final permit conditions.

Condition # 338

For S-2, S-3, S-4, S-5, Internal Combustion Engines, Landfill Gas Fired

1. ~~Oxides of Nitrogen (NO_x) emissions, calculated as NO₂, shall not exceed 3.4 g/hp-hr.~~
2. ~~Oxides of Nitrogen (NO_x) emissions, calculated as NO₂, shall not exceed 550 lb/day for sources S-2, S-3, S-4 and S-5 combined.~~
3. ~~The operator shall not operate this engine without air injection to the thermal oxidizing reactor at a minimum flowrate of 140 SCFM and 2 psig.~~
4. ~~Each thermal oxidizing reactor shall achieve at least 90% carbon monoxide (CO) emissions reduction when compared to inlet CO concentration.~~
5. ~~Carbon Monoxide (CO) emissions shall not exceed 7.5 gr/hp-hr.~~
6. ~~Carbon Monoxide (CO) emissions shall not exceed 1200 lbs/day for sources S-2, S-3, S-4 and S-5 combined.~~
7. ~~The operator shall maintain daily records of hours of engine operation and electrical power output. The format of the records shall be approved by the District.~~
8. ~~Upon request of the District, the operator shall conduct periodic source tests on all sources to assure compliance with conditions 1 through 6.~~

The following conditions supersede the above conditions effective January 1, 1997:

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- ~~(1) This engine shall be fired exclusively on landfill gas.~~
 - ~~(2) NO_x emissions, calculated as NO₂, shall not exceed 210 ppmv @ 15% O₂.~~
 - ~~(3) CO emissions shall not exceed 2000 ppmv @ 15% O₂.~~
 - ~~(4) Visible particulate emissions shall not exceed 0.5 on the Ringelmann chart.~~
-
- 1. The Internal Combustion Engines (S-2, S-3, S-4, and S-5) shall be fired on landfill gas exclusively. (Basis: Plant Cumulative Increase)
 - 2. Nitrogen Oxide (NO_x) emissions, from each internal Combustion Engine (S-2, S-3, S-4, and S-5) shall not exceed 210 ppmv, dry basis, corrected to 15% O₂. (Basis: BACT and Regulation 9-8-302.2)
 - 3. Carbon Monoxide (CO) emissions from each Internal Combustion Engine (S-2, S-3, S-4, and S-5) shall not exceed 740 ppmv, dry basis, corrected to 15% O₂. (Basis: BACT and Plant Cumulative Increase)
 - 4. In order to demonstrate compliance with Parts #2 and #3 above; Regulation 8, Rule 34, Sections 114 and 301.4; Regulation 9, Rule 8, Sections 302.2 and 302.3; the Permit Holder shall ensure that a District approved source test is conducted annually on each Internal Combustion Engine (S-2, S-3, S-4, and S-5). At a minimum, the annual source tests shall determine the following:
 - a. landfill gas flow rate to each engine (dry basis);
 - b. concentrations (dry basis) of carbon dioxide (CO₂), nitrogen (N₂), oxygen (O₂), methane (CH₄), total non-methane organic compounds (NMOC), and total hydrocarbons (THC) in the landfill gas;
 - c. exhaust gas flow rate from each engine (dry basis);
 - d. concentrations (dry basis) of NO_x, CO, CH₄, NMOC, THC, and O₂ in the exhaust gas from each engine;
 - e. the CH₄, NMOC, and THC destruction efficiencies achieved by each engine;
and
 - f. the combustion temperature of each engine during the test period.The first annual source test for each engine shall be conducted by no later than October

VI. Permit Conditions

- 1, 2002 or no later than 12 months after the issue date of the MFR Permit, whichever date occurs first. Subsequent source tests for each engine shall be conducted no sooner than 9 months and no later than 12 months after the previous source test. The Source Test Section of the District shall be contacted to obtain their approval of the source test procedures at least 14 days in advance of each source test. They shall be notified of the scheduled test date at least 7 days in advance of each source test. The source test report shall be submitted to the Compliance and Enforcement Division within 45 days of the test date. (Basis: BACT or Plant Cumulative Increase, Regulations 8-34-114, 8-34-301.4, 9-8-302.2, and 9-8-302.3)
5. Total reduced sulfur compounds in the collected landfill gas shall be monitored as a surrogate for monitoring sulfur dioxide in the exhaust from the Internal Combustion Engines. The concentration of total reduced sulfur compounds in the collected landfill gas shall not exceed 1300 ppmv (dry), reported as hydrogen sulfide (H₂S). In order to demonstrate compliance with this Part, the Permit Holder shall measure the total sulfur content in collected landfill gas on a weekly basis using a draeger tube. The landfill gas sample shall be taken from the main landfill gas header. The Permit Holder shall follow the manufacturer's recommended procedures for using the draeger tube and interpreting the results. The Permit Holder shall conduct the first draeger tube test no later than 3 months after the issue date of the MFR Permit and weekly thereafter. After collecting three months of landfill gas sulfur content data, the Permit Holder may reduce the sulfur content testing frequency to a monthly basis, if all tests indicate compliance with the limit specified above. After collecting one year of sulfur content data, the Permit Holder may reduce the sulfur content testing frequency to a quarterly basis, if all tests indicate compliance with the limit specified above. (Basis: Regulation 9-1-302)
6. The heat input to each Internal Combustion Engine (S-2, S-3, S-4, or S-5) shall not exceed 162 million BTU during any one day. The combined heat input to the four Internal Combustion Engines (S-2, S-3, S-4, and S-5) shall not exceed 236,520 million BTU during any rolling consecutive 12-month period. (Basis: Regulation 2-1-301)
7. In order to demonstrate compliance with Parts 5 and 6 above, the Permit Holder shall maintain the following records in a District approved log.
- a. Daily records of operating hours for each engine (S-2, S-3, S-4, and S-5), summarized on a monthly basis,
 - b. Monthly records of the combined consumption of landfill gas at all engines (S-2, S-3, S-4, and S-5),

VI. Permit Conditions

- c. Monthly records of the average methane content of the landfill gas burned in the engines (S-2, S-3, S-4, and S-5),
- d. Monthly records of the average high heat value of the landfill gas calculated by multiplying the methane content recorded pursuant to subpart c times the high heat value of methane (1013 BTU/scf), and
- e. Monthly records of the combined heat input to the engines (S-2, S-3, S-4, and S-5) calculated by multiplying the landfill gas consumption recorded pursuant to subpart b times the average high heat value of the landfill gas determined pursuant to subpart d.

Both these records and records of H₂S data shall be kept on site and made available for District inspection for a period of at least five years from the date on which a record is made. (Basis: Regulation 2-1-301)

District comments on proposed changes to Condition # 338:

The original (superceded) parts 1 and 5 limited NO_x emissions to 3.4 grams/bhp-hour and CO emissions to 7.5 grams/bhp-hour based on BACT requirements. These emission rates are equivalent to:

$$(3.4 \text{ g NO}_x/\text{bhp-hr}) * (750 \text{ bhp}) * (24 \text{ hrs/day}) / (453.6 \text{ g/lb}) = 134.92 \text{ lbs NO}_x/\text{day/engine}$$

$$(7.5 \text{ g CO/bhp-hr}) * (750 \text{ bhp}) * (24 \text{ hrs/day}) / (453.6 \text{ g/lb}) = 297.62 \text{ lbs CO/day/engine}$$

For the four engines combined, the emission limits were 539.7 pounds/day of NO_x, 98.5 tons/year of NO_x, 1190.5 pounds/day of CO, and 217.3 tons/year of CO.

The superceded part 2 limited NO_x emissions to 550 pounds/day and was intended to prevent NO_x emissions from exceeding 100 tons/year, which was the offset trigger level at the time. However, the emissions based on superceded part 1 (at the maximum possible operating rate) cannot exceed 550 pounds/day. Therefore, the superceded part 2 is not necessary and the District is proposing to delete it.

For CO, the superceded part 6 limited CO emissions to 1200 pounds/day and was the level at which an air quality impact analysis was conducted. This analysis showed that CO emissions would not interfere with attainment or maintenance of the NAAQS for CO. Therefore, CO offsets were not required. Since the maximum possible emissions, based on the CO limit of 7.5 grams/bhp-hour, cannot exceed 1200 pounds/day, the superceded part 6 is not necessary and the District is proposing to delete it.

VI. Permit Conditions

Superceded parts 3 and 4 were originally imposed to ensure compliance with the part 5 CO limit. These operating restrictions were later found to be unnecessary and were deleted. Superceded parts 7 and 8 are being replaced with new, more specific conditions as identified in proposed parts 4, 6, and 7.

On January 23, 1993, the District adopted Regulation 9, Rule 8. For rich-burn engines firing waste derived fuels, 9-8-302.2 limits NO_x emissions to 210 ppmv, dry at 15% O₂ and 9-8-302.3 limits CO emissions to 2000 ppmv, dry at 15% O₂. For an engine operating at 32% efficiency and burning landfill gas containing 50% methane with a high heat value of 500 BTU/scf, these concentrations were determined to be equivalent to 3.0 grams NO_x/bhp-hour and 17.6 grams CO/bhp-hour.

The 9-8-302.2 NO_x limit was determined to be no less stringent than the previous limit. The permit conditions were amended and part (2) superceded part 1. The District is proposing to restate this limit in the proposed new part 2.

Although the 9-8-302.3 CO limit is less stringent than the previous BACT limit, the District permit conditions were amended such that part (2) superceded part 5. This condition change would have the effect of increasing CO emissions to:

$(17.6 \text{ g CO/bhp-hr}) \cdot (750 \text{ bhp}) \cdot (24 \text{ hrs/day}) / (453.6 \text{ g/lb}) = 698.42 \text{ lbs CO/day/engine}$

For all four engines combined, the new CO emissions would be 2793.7 lbs/day and 509.8 tons/year. This condition change would have resulted in CO emission increases of 1603 lbs/day and 292.5 tons/year of CO. Such a condition change could not be authorized without triggering a PSD review. Since no PSD review was conducted and no CO emission increases were attributed to the facility pursuant to the implementation of the new Regulation 9, Rule 8 limits, the District's amended Condition #338, part (3) is not valid. The District is now proposing to delete this part (3) and to replace it with the equivalent of the original valid limit of 7.5 grams CO/bhp-hour.

Worst case emissions occur when an engine is burning landfill gas with low methane content. The engine efficiency is assumed to be 28%. The landfill gas is assumed to contain 45% methane and have a high heat value of 456 BTU/scf. At 45% methane and 0% excess air, landfill gas will produce 4.396 scf of flue gas per scf of landfill gas. Under these conditions, the emission limit of 7.5 g CO/bhp-hour is equivalent to 740 ppmv of CO, dry at 15% O₂.

There is no basis for requiring the Ringelmann 0.5 limit that is stated in amended part (4).

VI. Permit Conditions

Therefore the District is proposing to delete this limit.

The proposed new part 4 is necessary to demonstrate compliance with the applicable NO_x, CO, THC, and NMOC limits listed in the permit conditions, Regulation 8, Rule 34, and Regulation 9, Rule 8.

The proposed new part 5 is necessary to demonstrate compliance with the applicable SO₂ limit in Regulation 9, Rule 1.

*The proposed new part 6 describes the capacity of the engines based the maximum operating rates (15,000 scf LFG/hour * 450 BTU/scf = 6.75 MM BTU/hour) reported on the data forms submitted for Application #30485. The proposed new part 7 requires records to demonstrate compliance with these capacities based on measured landfill gas flow rates and average methane content. Using these proposed heat input limits and the new NO_x and CO concentration limits, NO_x and CO emissions will not exceed the original maximum permitted emission rates (134.92 lbs NO_x/day/engine and 297.62 lbs CO/day/engine) when burning landfill gas with an average methane content of 50% or more.*

(162 E6 BTU/day)/(506.5 BTU/scf LFG)(4.7733 scf flue/scf LFG)*(20.95 scf @ 15% O₂)/(5.95 scf @ 0% O₂)*(210 scf NO_x/10⁶ scf @ 15% O₂)/(386.8 scf NO_x/lbmol)*(46.01 lbs NO_x/lbmol) = 134.3 lbs NO_x/day/engine*

(162 E6 BTU/day)/(506.5 BTU/scf LFG)(4.7733 scf flue/scf LFG)*(20.95 scf @ 15% O₂)/(5.95 scf @ 0% O₂)*(740 scf CO/10⁶ scf @ 15% O₂)/(386.8 scf CO/lbmol)*(28.01 lbs CO/lbmol) = 288.1 lbs CO/day/engine*

VII. APPLICABLE LIMITS AND COMPLIANCE MONITORING REQUIREMENTS

This section has been included only to summarize the applicable emission limits contained in Section IV, Source-Specific Applicable Requirements, of this permit. The following tables show the relationship between each emission limit and the associated compliance monitoring provisions, if any. The monitoring frequency indicates whether periodic (P) or continuous © monitoring is required. For periodic monitoring, the frequency of the monitoring has also been shown, either annual (A), quarterly (Q), monthly (M), weekly (W), daily (D), or on an event basis (E). No monitoring (N) has been required if the current applicable rule or regulation does not require monitoring, and the operation is unlikely to deviate from the applicable emission limit based upon the nature of the operation.

Table VII – A
Applicable Limits and Compliance Monitoring Requirements
S-2, S-3, S-4, S-5- INTERNAL COMBUSTION ENGINES, LANDFILL GAS FIRED

Type of Limit	Emission Limit Citation	FE Y/N	Future Effective Date	Emission Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
TSP	BAAQMD 6-301	Y		Ringelmann No. 1		N	
TSP	BAAQMD 6-310	Y		0.15 grains/dscf		N	
TOC (Total Organic Compounds Plus Methane)	BAAQMD 8-34-114	Y	Expires 7/1/02	90% removal by weight	BAAQMD Condition # 338, Part 4e	P/A	Annual Source Test
TOC	BAAQMD 8-34-301.2	N		1000 ppmv as methane (component leak limit)	BAAQMD 8-34-501.6 and 8-34-503	P/Q	Quarterly Inspection and Records
TOC	SIP 8-34-114	Y ¹		90% removal by weight	BAAQMD Condition # 338, Part 4e	P/A	Annual Source Test
TOC	SIP 8-34-301.1	Y		1000 ppmv as methane (component leak limit)	SIP 8-34-503	P/Q	Quarterly Inspection

VII. Applicable Limits and Compliance Monitoring Requirements

Table VII – A
Applicable Limits and Compliance Monitoring Requirements
S-2, S-3, S-4, S-5- INTERNAL COMBUSTION ENGINES, LANDFILL GAS FIRED

Type of Limit	Emission Limit Citation	FE Y/N	Future Effective Date	Emission Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
Non-Methane Organic Compounds (NMOC)	BAAQMD 8-34-301.4b	N	7/1/02	98% removal by weight OR < 120 ppmv dry @ 3% O ₂ , expressed as methane	BAAQMD Condition # 338, Part 4e	P/A	Annual Source Tests
SO ₂	BAAQMD 9-1-301	Y		Property Line Ground Level Limits ≤ 0.5 ppm for 3 minutes, ≤ 0.25 ppm for 60 minutes, and ≤ 0.05 ppm for 24 hours		N	
SO ₂	BAAQMD 9-1-302	Y		≤ 300 ppm (dry)	BAAQMD Condition # 338, Part 5	P/W, M, or Q (Monthly if 3 months data < 1300 ppm, Quarterly if 1 year of data < 1300 ppm)	Sulfur Analysis of landfill gas only
H ₂ S	BAAQMD 9-2-301	N		Property Line ground level limits ≤ 0.06 ppm Averaged over 3 minutes and ≤ 0.03 ppm Averaged over 60 minutes		N	

VII. Applicable Limits and Compliance Monitoring Requirements

Table VII – A
Applicable Limits and Compliance Monitoring Requirements
S-2, S-3, S-4, S-5- INTERNAL COMBUSTION ENGINES, LANDFILL GAS FIRED

Type of Limit	Emission Limit Citation	FE Y/N	Future Effective Date	Emission Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
Total Sulfur Content in Landfill Gas	BAAQMD Condition # 338, Part 5	Y		≤ 1300 ppmv (dry)	BAAQMD Condition # 338, Part 5	P/W, M, or Q (Monthly if 3 months data < 1300 ppmv (dry), Quarterly if 1 year of data < 1300 ppmv (dry))	Sulfur Analysis of landfill gas only
NO _x	BAAQMD 9-8-302.2 and BAAQMD Condition # 338, Part 2	Y		Waste Fuel Gas, Rich-Burn 210 ppmv dry @ 15% O ₂	BAAQMD Condition # 338, Part 4d	P/A	Annual Source Test
CO	BAAQMD 9-8-302.3	Y		Waste Fuel Gas: 2000 ppmv dry @ 15% O ₂	BAAQMD Condition # 338, Part 4d	P/A	Annual Source Test
CO	BAAQMD Condition # 338, Part 3	Y		740 ppmv dry @ 15% O ₂	BAAQMD Condition # 338, Part 4d	P/A	Annual Source Test
Emission Control System Shutdown Time	BAAQMD 8-34-113.2	N		240 hours/year	BAAQMD 8-34-501.2	P/D	Records
Emission Control System Shutdown Time	SIP 8-34-113.2	Y ¹		12 hours/calendar month	SIP 8-34-501.2	P/D	Records

VII. Applicable Limits and Compliance Monitoring Requirements

Table VII – A
Applicable Limits and Compliance Monitoring Requirements
S-2, S-3, S-4, S-5- INTERNAL COMBUSTION ENGINES, LANDFILL GAS FIRED

Type of Limit	Emission Limit Citation	FE Y/N	Future Effective Date	Emission Limit	Monitoring Requirement Citation	Monitoring Frequency (P/C/N)	Monitoring Type
Temperature of Combustion Zone		N	7/1/02	Temperature limit will be established in a permit condition during review of Collection and Control System Design Plan, which is due 12/31/00	BAAQMD 8-34-501.3 and 8-34-507 (effective 7/1/02)	C	Temperature sensor and continuous recorder; effective 7/1/02
Gas Flow	BAAQMD 8-34-301 and 301.1;	N		Vent all collected gases to a properly operating control system and operate control system continuously.	BAAQMD 8-34-501.10 and 508 (effective 7/1/02)	C	Gas Flow Meter and Recorder (every 15 minutes); effective 7/1/02
Gas Flow	SIP 8-34-301 and 301.4	Y		Vent all collected gases to a properly operating control system and operate control system continuously.	SIP 8-34-501.1	P/D	Operating Records
Periods of Inoperation for Parametric Monitors	BAAQMD 1-523.2	Y	7/1/02	15 consecutive days/incident and 30 calendar days/12 month period	BAAQMD 1-523.4	P/D	Records of occurrence and duration
Heat Input	BAAQMD Condition # 338, Part 6	Y		162 MM BTU/day/engine and 236,520 MM BTU per 12-month period for all engines combined	BAAQMD Condition # 338, Part 7a-e	P/D,M	Records

- 1 This section has been removed from BAAQMD Regulations because it has been superseded. Nevertheless, the source must comply with this regulation until US EPA has reviewed and approved (or disapproved) the District's revision of the regulation.

VII. Applicable Limits and Compliance Monitoring Requirements

VIII. TEST METHODS

The test methods associated with the emission limit of a District regulation are generally referenced in Section 600 of the regulation. The following table indicates only the test methods associated with the emission limits referenced in Section VII, Applicable Emission Limits & Compliance Monitoring Requirements, of this permit.

Table VIII
Test Methods

Applicable Requirement	Description of Requirement	Acceptable Test Methods
BAAQMD 6-301	Ringelmann No. 1 Limitation	Manual of Procedures, Volume I, Evaluation of Visible Emissions
BAAQMD 6-310	Particulate Weight Limitation	Manual of Procedures, Volume IV, ST-15, Particulate
BAAQMD 8-34-114	Energy Recovery Device and Emission Control System	Manual of Procedures, Volume IV, ST-7, Organic Compounds and ST-14, Oxygen, Continuous Sampling; or EPA Reference Method 18, 25, 25A, or 25C
BAAQMD 8-34-301.2	Collection and Control System Leak Limitations	EPA Reference Method 21, Determination of Volatile Organic Compound Leaks
BAAQMD 8-34-301.4	Limits for Other Emission Control Systems	Manual of Procedures, Volume IV, ST-7, Organic Compounds and ST-14, Oxygen, Continuous Sampling; or EPA Reference Method 18, 25, 25A, or 25C
SIP 8-34-301.1	Collection and Control Systems Leak Limitations	EPA Reference Method 21, Determination of Volatile Organic Compound Leaks
SIP 8-34-301.3 ¹	Energy Recovery Device or Emission Control System Limit	Manual of Procedures, Volume IV, ST-7, Organic Compounds; or EPA Reference Method 25 or 25A
BAAQMD 9-1-302	General Emission Limitation	Manual of Procedures, Volume IV, ST-19A, Sulfur Dioxide, Continuous Sampling, or ST-19B, Total Sulfur Oxides, Integrated Sample
BAAQMD 9-8-302.2	Waste Derived Fuel Gas NO _x Limits for Rich Burn Engines	Manual of Procedures, Volume IV, ST-13A, Oxides of Nitrogen, Continuous Sampling and ST-14, Oxygen, Continuous Sampling
BAAQMD 9-8-302.3	Waste Derived Fuel Gas CO Limits	Manual of Procedures, Volume IV, ST-6, Carbon Monoxide, Continuous Sampling and ST-14, Oxygen, Continuous Sampling
BAAQMD Condition # 338		

VIII. Test Methods

Table VIII
Test Methods

Applicable Requirement	Description of Requirement	Acceptable Test Methods
Part 2	NO _x Limit	Manual of Procedures, Volume IV, Oxides of Nitrogen, Continuous Sampling, and ST-14, Oxygen, Continuous Sampling
Part 3	CO Limit	Manual of Procedures, Volume IV, ST-6, Carbon Monoxide, Continuous Sampling, and ST-14, Oxygen, Continuous Sampling
Part 5	Limit for Total Reduced Sulfur Compounds in Landfill Gas	Draeger Tube: used in accordance with manufacturer's recommended procedures
Part 6	Heat Input Limit	Gas Flow Meter: used in accordance with manufacturer's recommended procedures; Methane Content: determined by Manual of Procedures, Volume IV, ST-7, Organic Compounds or EPA Reference Method 18, 25, 25A, or 25C; and Calculation Procedure identified in BAAQMD Condition # 338, Part 7d

- 1 This section has been removed from BAAQMD Regulations because it has been superseded. Nevertheless, the source must comply with this regulation until US EPA has reviewed and approved (or disapproved) the District's revision of the regulation.

IX. PERMIT SHIELD

Not applicable.

X. Glossary

X. GLOSSARY

BAAQMD

Bay Area Air Quality Management District

BACT

Best Available Control Technology

CAA

The federal Clean Air Act

CAAQS

California Ambient Air Quality Standards

CEQA

California Environmental Quality Act

CFR

The Code of Federal Regulations. 40 CFR contains the implementing regulations for federal environmental statutes such as the Clean Air Act. Parts 50-99 of 40 CFR contain the requirements for air pollution programs.

CO

Carbon Monoxide

Cumulative Increase

The sum of permitted emissions from each new or modified source since a specified date pursuant to BAAQMD Rule 2-1-403, Permit Conditions (as amended by the District Board on 7/17/91) and SIP Rule 2-1-403, Permit Conditions (as approved by EPA on 6/23/95). Used to determine whether threshold-based requirements are triggered.

District

The Bay Area Air Quality Management District

EPA

The federal Environmental Protection Agency.

Excluded

Not subject to any District Regulations.

X. Glossary

Federally Enforceable, FE

All limitations and conditions which are enforceable by the Administrator of the EPA including those requirements developed pursuant to 40 CFR Part 51, subpart I (NSR), Part 52.21 (PSD), Part 60, (NSPS), Part 61, (NESHAPs), Part 63 (HAP), and Part 72 (Permits Regulation, Acid Rain), and also including limitations and conditions contained in operating permits issued under an EPA-approved program that has been incorporated into the SIP.

HAP

Hazardous Air Pollutant. Any pollutant listed pursuant to Section 112(b) of the Act. Also refers to the program mandated by Title I, Section 112, of the Act and implemented by both 40 CFR Part 63, and District Regulation 2, Rule 5.

Major Facility

A facility with potential emissions of regulated air pollutants greater than or equal to 100 tons per year, greater than or equal to 10 tons per year of any single hazardous air pollutant, and/or greater than or equal to 25 tons per year of any combination of hazardous air pollutants, or such lesser quantity as determined by the EPA administrator.

MFR

Major Facility Review. The District's term for the federal operating permit program mandated by Title V of the Act and implemented by District Regulation 2, Rule 6.

MOP

The District's Manual of Procedures.

NAAQS

National Ambient Air Quality Standards

NESHAPs

National Emission Standards for Hazardous Air Pollutants. Contained in 40 CFR Part 61.

NMHC

Non-methane Hydrocarbons (same as NMOC)

NMOC

Non-methane Organic Compounds (same as NMHC)

NO_x

Oxides of nitrogen.

X. Glossary

NSPS

Standards of Performance for New Stationary Sources. Federal standards for emissions from new stationary sources. Mandated by Title I, Section 111 of the Act, and implemented by both 40 CFR Part 60 and District Regulation 10.

NSR

New Source Review. A federal program for pre-construction review and permitting of new and modified sources of air pollutants for which the District is classified "non-attainment". Mandated by Title I of the Clean Air Act and implemented by 40 CFR Parts 51 and 52 as well as District Regulation 2, Rule 2. (Note: There are additional NSR requirements mandated by the California Clean Air Act.)

Offset Requirement

A New Source Review requirement to provide federally enforceable emission offsets at a specified ratio for the emissions from a new or modified source and any pre-existing cumulative increase minus any onsite contemporaneous emission reduction credits. Applies to emissions of POC, NO_x, PM₁₀, and SO₂.

Phase II Acid Rain Facility

A facility that generates electricity for sale through fossil-fuel combustion and by virtue of certain other characteristics (defined in Regulation 2, Rule 6) is subject to Titles IV and V of the Clean Air Act.

POC

Precursor Organic Compounds

PM

Total Particulate Matter

PM₁₀

Particulate matter with aerodynamic equivalent diameter of less than or equal to 10 microns

PSD

Prevention of Significant Deterioration. A federal program for permitting new and modified sources of air pollutants for which the District is classified "attainment" of the National Air Ambient Quality Standards. Mandated by Title I of the Act and implemented by both 40 CFR Part 52 and District Regulation 2, Rule 2.

SIP

State Implementation Plan. State and District programs and regulations approved by EPA and developed in order to attain the National Air Ambient Quality Standards. Mandated by Title I of the Act.

X. Glossary

SO₂

Sulfur dioxide

THC

Total Hydrocarbons include all non-methane hydrocarbons plus methane and are the same as TOC.

Title V

Title V of the federal Clean Air Act. Requires a federally enforceable operating permit program for major and certain other facilities.

TOC

Total Organic Compounds include all non-methane organic compounds plus methane and are the same as THC.

TSP

Total Suspended Particulate

VOC

Volatile Organic Compounds

Units of Measure:

bhp	=	brake-horsepower
btu	=	British Thermal Unit
g	=	grams
gal	=	gallon
hp	=	horsepower
hr	=	hour
lb	=	pound
in	=	inches
max	=	maximum
m ²	=	square meter
min	=	minute
mm	=	million
ppmv	=	parts per million, by volume
ppmw	=	parts per million, by weight
psia	=	pounds per square inch, absolute
psig	=	pounds per square inch, gauge
scfm	=	standard cubic feet per minute

X. Glossary

yr = year

XI. APPLICABLE STATE IMPLEMENTATION PLAN

See Attachments